Fiber Laser Coherent Lidar for Wake-Vortex Hazard Detection, Phase I

Completed Technology Project (2009 - 2009)

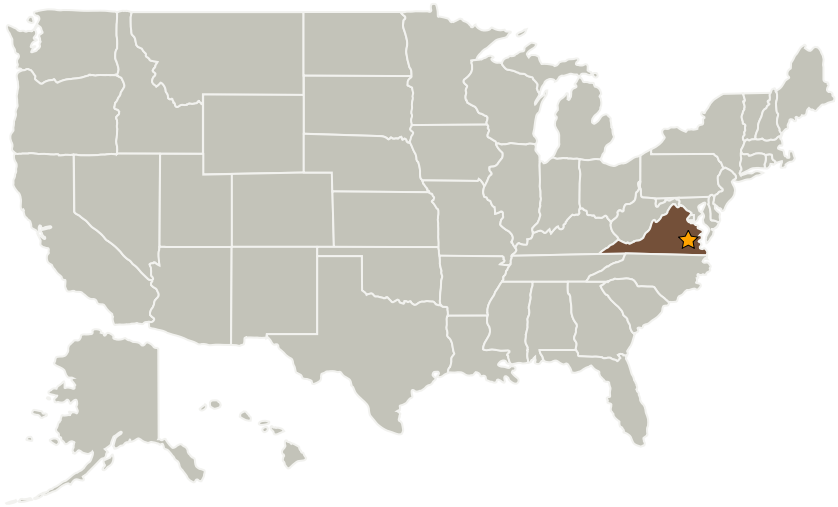
Project Introduction

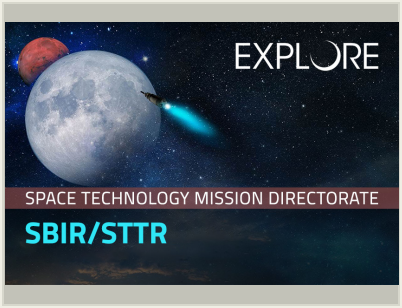
We propose a 1.5um fiber-optic pulsed coherent lidar as a highly effective sensor sub-system for airborne wake-vortex hazard detection. The proposed design is based on a recently developed platform at Fibertek, for fiber-optic pulsed coherent lidar capable of 6km range, and operating at high pulse rate to give high-resolution spatial map and circulation strength, characteristic of typical wake-vortex signatures. The proposed system uses all COTS 1.5um fiber-optic component technology and COTS high-speed digital electronics, to provide a cost-effective system, that is amenable to rapid transition for field testing and adoption.

Anticipated Benefits

(1) Wind vector sensor for aiding and/or extending Unmanned Aerial Vehicle (UAV) flight duration, for extended surveillance missions (2) Tracking of hazardous aerosol plume detection, for providing advance warning to affected entities.

Primary U.S. Work Locations and Key Partners





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Organizations Performing Work	Role	Type	Location
★Langley Research Center(LaRC)	Lead Organization	NASA Center	Hampton, Virginia
Metis Technology Solutions, Inc.	Supporting Organization	Industry Women-Owned Small Business (WOSB)	Albuquerque, New Mexico

Primary U.S. Work Locations
Virginia

Organizational Responsibility

Responsible Mission Directorate:

Space Technology Mission Directorate (STMD)

Lead Center / Facility:

Langley Research Center (LaRC)

Responsible Program:

Small Business Innovation Research/Small Business Tech Transfer

Project Management

Program Director:

Jason L Kessler

Program Manager:

Carlos Torrez

Project Manager:

Ivan O Clark

Principal Investigator:

Shantanu Gupta

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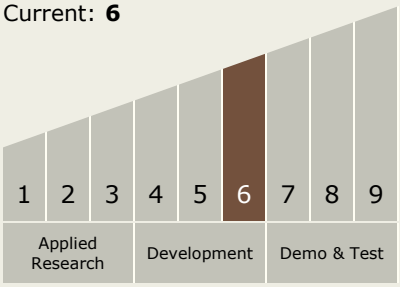
Technology Maturity (TRL)

Start: **6**
Current: **6**



Technology Areas

Primary:

- TX08 Sensors and Instruments
  - TX08.1 Remote Sensing Instruments/Sensors
    - TX08.1.5 Lasers